
OBSERVATIONS IN THE MOUTH DURING
PREGNANCY AND THE CATAMENIA.

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OBSERVATIONS IN THE MOUTH DURING PREGNANCY AND THE CATAMENIA.

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The observation is very familiar that during pregnancy, when the uterus is congested, the arteries distended, and the general condition plethoric, the sympathetic influence of the nervous system upon distant organs like the teeth is very marked. As the uterus enlarges there is not only abnormal pressure upon the bowels, bladder, kidneys, and ultimately the liver, but the lymphatic vessels become very large and numerous; many changes occur in the secretions of the different glandular organs, while there is the direct abstraction of lime from the teeth and the osseous system to which I alluded in my last paper. It is not surprising that from this center of life, besieged by an aggressive and growing fetus, conditions of a reflex nervous as well as of a purely pathological character should be present in the teeth and mouth, and that the normally sensitive salivary and mucous glands should not only have their functional activity increased, but changed in their chemical character.

It is perhaps unfair to expect general physicians as a class to interest themselves enough in the study of the mouth to make their opinions or researches undeniable. The tongue as an index of disease as well as of convalescence is too often the only thing in it most of them care to examine. It is not unreasonable, therefore, to suppose that a profession exclusively devoted to the mouth would be more accurate observers of the state of glands, which give them hourly trouble, even when in a normal condition. Indeed, the dentist ought to be a daily detective of ill-doing tonsils, uvula, fauces, and pharynx. He may often be the first to discover quinsy, the film of diphtheria, scarlatina, syphilitic ulcers, etc. He may not only see enough in time in ragged teeth to prevent cancer or other malignant diseases, but he may see enough in time to send patients to their physician for medical or surgical treatment outside of his sphere. Always looking into the mouth, he ought to know all its abnormal departures.

I am led to these remarks by the prevalent opinion, among our medical authorities, that abnormal excitement of the salivary glands during pregnancy is only exceptional, and that there is no

such thing deserving the name of salivation, unless the discharge is so profuse or debilitating as to be distinct and troublesome. Upon this point, which is dismissed with suggestive indifference, there is general and special agreement. Now, I venture to believe that the opportunities for observation are more favorable for dentist than physician. As a rule pregnant women do not tell the latter of their gestation until the fifth or sixth month. There are naturally cases which a dentist as such cannot know or investigate; but if he is on the *qui vive*, with the object in view of saving the woman's teeth, it is not so difficult as may at first be imagined. Every exceptional state of the salivary glands may be observed in the ordinary examination of the mouth, and observed in such a way and at such times as to distinguish the increase of saliva associated with the act of operating from abnormal secretions, with which handling the mouth has nothing to do. The numerous causes of hyper-secretion of saliva ought to be known to every dentist. It may occur during the use of certain drugs. It may even be idiosyncratical with the use of certain foods and fruits. It may have its cause in the stomach and intestines, and some authorities believe that those two organs, as regards the liver and pancreas, hold the same relation as the mouth and salivary glands. It is often pathological, as a coincidence of acute rheumatism, in which case it is invariably acid; or of facial neuralgia, in which it is invariably alkaline, containing an excess of soda. It is associated with diabetes, small-pox, and with nearly all inflammatory affections. I have frequently observed it to begin with the very first inhalation of ether and chloroform—never under nitrous oxide gas—and remain for several days as an annoying *flux de bouche*, coincident with irritation of the pituitary or Schneiderian membrane. In cases of chronic catarrh or hay fever, ether and chloroform seem invariably to arrest the nasal discharge, and increase that from the salivary glands; and upon recovery from the effect of the anesthetic the mucous membrane of the nares is much less irritable. Hyper-secretion of saliva may be purely the effect of nervous irritation, as when excited by the sight of appetizing food; just as certain emotions will increase the secretion of milk in nursing mothers, or as exhilaration will increase the gastric secretion. Anything which excites the fifth pair of nerves, which controls the nervous system of the salivary glands, will alone excite an increased flow of saliva. But the hyper-secretion associated with pregnancy *per se* is no doubt an unconscious reflex action from the uterine mucous membrane, or *decidua*, to the salivary and mucous glands, through the medium of the sympathetic ganglia and their nerves. Upon the submaxillary gland, which is the principal one excited, the submaxillary sympathetic ganglion is situated, distributing branches

to the sides of the tongue and to the submaxillary and sublingual glands. The phenomena of salivation in pregnancy seem to me to be thus explained by the physiological properties of the sympathetic ganglion, and the primary activity present in the uterine mucous membrane. For, whenever the decidua is exfoliated, as it is after birth, or in abortion, the hyper-secretion ceases in a few weeks. The point I wish to make in this connection is one contrary to what I venture to call the imperfect observation of purely medical authorities, viz., that there is in every case not diverted by febrile affections a preternatural secretion of saliva, from the early months of pregnancy to the time of lactation; and that in every case there is not only diminished alkalinity in a marked degree, but in the large majority of cases a decided acid reaction. No doubt the increased secretion often may not be sufficient to become troublesome, like recognized *ptyalism*; or it may be so abundant as to demand iodide of potassium or other constitutional treatment; but it is a hyper-secretion, nevertheless, and, having almost invariably an acid reaction, no doubt explains why, with the coincident loss of lime in the tooth-structure, the teeth of pregnant women decay so rapidly. Generally this proceeds without any sponginess of the gums, but it is not uncommon to find much periosteal irritation, extending sometimes to live pulps in teeth that are not carious, causing their death; the infiltration of serum to the dentinal tubuli, and not unfrequently periodontitis of the most active character, terminating in alveolar abscess. One very remarkable ending of just such a case occurred in my own family. A pulp died in a sound superior central incisor, and decomposition followed. I am ashamed to say that I neglected the case, as shoemakers, it is said, neglect to shoe their families, and I endeavored by the use of leeches at the eleventh hour to relieve the congested state of the vessels. I know I should have opened to the pulp cavity, but one fine morning nature saved me the trouble, and had her revenge by splitting the tooth, from expansion of gas, from foramen to crown.

Now, the average hyper-secretion of saliva is not at all serious, excepting so far as the acidity is concerned; but the extreme condition is not only disastrous to the teeth, but may induce constitutional debility. I think, too, that the profuse salivation is always coincident with excessive loss of lime in the teeth, and that it not only indicates a demand for astringent or constitutional correctives, but a special alimentation, which I persist in believing to be as important at proper times for the pregnant woman as for the fetus. Idiopathic or spontaneous salivation, as a specific form of inflammation of the parotid glands, or *ptyalism*, induced by mercury, may be present; but that of pregnancy is easily distinguished from the

latter by the absence of the coppery taste in the mouth and the mercurial fetor. In mumps we find the parotid glands enlarged and tense, and the submaxillary specially excited. In fact, any chronic disease of the salivary glands, as well as any simple inflammation, such as occurs in teething, will be associated with increased salivary discharge. The parotid has been shown by Bernard to be under the influence of the trigeminal and facial nerves, and that neuralgias of the fifth pair, and diseases of the teeth, may cause an increased flow of saliva by reflex action. Nothing is clearer to us amid the fog of doubt than that the sympathetic system of nerves controls salivary secretion. Certain nerve-centers are directly concerned in all increased secretion, from whatever cause, pregnancy included. A dentist's finger placed in the mouth stimulates the sensitive nerve-fibers beneath the epithelium of the mucous membrane of the tongue. Our operations do not excite the parotid glands any more than food; but the submaxillary and sublingual demand our watchful attention. Could we as easily and effectually shut off the discharge from these glands as we can compress an artery, the vital force of many an operator, as well as the quality of operations, would be much improved.

Magitot has fully elaborated the etiology of the saliva and its modifications, but neither he nor any other writer I have examined has recognized hyper-secretion as an invariable sign and coincidence of pregnancy. It might not be correct nomenclature to speak of this as a pathognomonic sign of pregnancy, as pregnancy itself is purely physiological; but it is as inseparable from pregnancy as any pathological indications, such as the rash in scarlatina, the pustules in small-pox, or the characteristic signs of any other disease. Or it might be more properly mentioned as distinctly a sign of pregnancy, as the discharge of non-coagulable blood is of menstruation, though, like it, it may be more or less profuse. We can all recall instances where this condition was mistaken by eager anti-amalgamites for the salivation they fancied was caused by amalgam fillings; when it was diagnosed as such in spite of the absence of any mercurial indications, and even when the accused amalgam, which was found guilty without trial, was discovered by others to be innocent tin.

But what specially concerns us as practical men is the chemical character of this increased flow, and its effect upon the hard tissues of the teeth. I suppose few will deny but that the teeth of women are, as a rule, poorer in structure than those of men; and that at no time of a woman's life are they more predisposed to caries than during pregnancy. It would be an immense boon to humanity if we could discover how to alter those social circumstances of civili-

zation which in our day, and especially on our continent, convert the natural into the pathological, or at least stimulate the functions of the nervous system to an intense hyperesthesia beyond their physiological endurance. I hope we shall have more and more investigation and more light upon this subject, for we sadly need it; and if we as dentists aim to save teeth, we must learn how to grow better ones, as well as to keep fairly good ones without the excavator and the plugger. I am not prepared to say that saliva from the glands during pregnancy is in every case acid; but I have been very faithful and careful in my examinations, extending back to 1868, and my opportunities for observation lead me to believe that it is most generally so. The saliva in health has always an alkaline reaction from the glands, and an acid one from the mucous follicles of the mouth. The buccal saliva furnishes all the acid requisite to produce necessary chemical changes in food for digestion. Now, it is not at all difficult to find out in every case the character of the secretions which flow from the different glands before they become mixed. Bidder and Schmidt have studied them fully in the lower animals. The parotid saliva was obtained pure from the dog by exposing the duct of Steno and introducing into it a fine silver canula, through which it was conducted as easily as the saliva is collected from the mouth by the saliva syphon. To obtain the submaxillary saliva the canula was inserted into Wharton's duct; while the mucous was obtained pure by ligaturing the ducts of Steno and Wharton and the sublingual gland, and collecting the secretion that came from the mucous membrane. Dalton obtained the parotid saliva of the human subject by inserting into Steno's duct a silver canula one-twenty-fifth to one-twentieth of an inch in diameter, and letting the saliva run out of the mouth into a receptacle. The reaction of these four distinct fluids in almost every case of pregnancy I have examined has been of an acid character; making every allowance for causes I have mentioned, as well as for food fermentation.

In the conservative or destructive treatment of the pulp, these conditions of pregnancy are frequently obstructive, especially where nutrition is imperfect. I believe I have seen many proofs of the direct benefit derived in depraved nutrition from the previous and continued use of chemical foods, where for some reason those of nature were not assimilated, because perhaps idiosyncrasies of taste repelled them, or digestion was impaired. The pulp is a resentful monopolist, and allows no intrusion into its cavity with impunity. There are conditions of the blood in pregnancy when the tendency to inflammation is increased when it is exposed; when, also, the possibility of its preservation is diminished.

There is a frequent symptomatic odontalgia in the third or fourth month of pregnancy, owing, I suppose, to the same nervous sympathy between the uterus and the mouth that exists between the uterus and the stomach. I have often read discussions as to the propriety of extracting such teeth at such a time; but it seems to me that this is a round-about way to treat the trouble. Associated with pregnancy we have frequent migraine, facial neuralgia. These reflex actions, like the nausea and vomiting of pregnancy, are owing not to the teeth or the head, but to the uterine mucous membrane; and in extracting one tooth the pain often passes to another, unless there is such local periosteal disease as to warrant no alternative. In the ordinary "toothache of pregnancy," I remember long ago using bi-meconate of morphia, hypodermically injected over the affected tooth. Leeches would be frequently useful.

In one or two words, I may add the observation familiar to us all that during pregnancy the dentine is generally abnormally sensitive, consequent again upon that reflex action which is at the root of the trouble we have in treating these organs at that time. Temporizing with tender touch and soft temporary fillings, carefully avoiding pain or disagreeable impressions, advising special hygienic precautions,—this ought to be all we should do.

Litmus-paper ought to be in the hands of every dentist, and ought to be used in every case at every visit of every patient, and a tabulated record kept of results. True science goes before as well as behind the merely operative. It is not enough for the permanency of our operations to know the predisposing causes of decay. It must be recognized as an unexceptional duty to know and neutralize the active agencies as well. It is very easy phonetically or otherwise to record opposite each appointment the tests of the saliva; and one important effect will be that you impress upon your patients the ease and importance of detecting these changes for themselves and counteracting their influence. The careful use of litmus-paper, by keeping it clean and dry, not allowing it to touch the lips, the mucous, or the margin of the gums, but dipping it into the mixed saliva as it accumulates, and then letting it dry upon a clean napkin—these little things are important. Tests vary in the same mouth. Often there may be no marked reaction in the ordinary run of our patients. To be faithful records, they must be made before and after meals,—in fact, at least six times a day. Intelligent patients can be taught to assist us. They ought to be taught that nature intended the saliva to preserve, not to destroy, the tissues it bathes. Instruct them in its normal and abnormal conditions; the acids, such as lactic, acetic, and oxalic, which may be formed in the gland itself or in the mouth by decomposition of food, mucous, etc.; the

uric, which is caused by the retention of urine, or by disease of the kidneys, which fail to eliminate it from the blood; the acids which are the result of medicines; the conditions which are the result of disease. Again, an excess of alkali may be present, which, while not acting upon enamel, will act upon exposed dentine, and thus the normal reaction may, by its excess, become *the* exciting cause of decay.

Any special and prolonged irritation of the uterus may induce acidity of the saliva. Any serious depression of the vital powers during pregnancy unbalances the circulation, and centers the nervous force in one organ. Where there is rapid decay at this time, there must not only be a diminution of phosphate of lime, and an increase of the more soluble carbonate, but that inevitable acidity, to which two circumstances it seems reasonable to attribute the marked softening of the teeth. The pharmacist as well as the hygienist must work here hand in hand.

Just a few words now upon another condition. There are at least twelve times in each year, for about thirty years of a woman's life, when she is abnormally sensitive to pain, and salivary changes often occur which directly affect the teeth. I refer to the menstrual period, especially in dysmenorrhea. During the early and the last months, especially with the first child, because the novelty of the occasion induces more exalted reflex action, patients who at other times bear pain well then flinch from its slightest approach. In hysteria, for instance, a woman may be unable to control herself enough to brush her hair. Each particular hair seems to stand on end, if not "like quills upon the fretful porcupine," as sensitive as if they were pulps of teeth. She may have hysterical neuralgia and toothache, and she will be sure to have hyper-sensibility of dentine and hyper-secretion of saliva. The teeth, even sound teeth, ache. A condition in the mouth exists which will disappear when the hysteria disappears, and which might be called *odontium hystericus*. It is next to impossible to excavate a cavity, or even to dry one, for such a patient. We may each of us pray that when our patients have this trouble we may be out of town.

But it is not uncommon to meet almost a similar result of menstruation. The catamenia in our modern fashionable society has an especial reflex action upon the nervous system, and associated with the coincident lassitude, pains in the back and loins, has frequently a direct effect upon diseased teeth, as well as upon the sensitiveness of dentine. Everybody knows there are women who can give birth to triplets as easily as if they were rabbits, and who suffer less inconvenience during their menses than they would from epistaxis. But we have to do with the average modern woman in our cities, and so far as opportunity has been afforded me, the observation is

very common that hyper-sensitiveness of dentine, increased susceptibility to pain, and hyper-secretion of saliva, which very often has the same acid reaction as in pregnancy, are almost invariably associated with the menstrual period. It is no surprise that even regular catamenia should induce some nervous reflex and sympathetic action along the ganglionic system. We know that a small ulcer on the os uteri will provoke painful micturition, and that in such slight ailments as costiveness of the bowels and foul stomach violent headache may ensue. A good deal of doubt exists among pathologists as to the true functions of the ganglia, and it may be that in menstruation, as in pregnancy, they are the centers of nervous action sympathetically conveyed to the nerves of the teeth, increasing the susceptibility to pain of the pulp and the contents of the tubuli. It may be, too, that the change in the normal character of the saliva has some active influence at this time on exposed dentine. Some day posterity may smile at our ignorance. To-day we go on bravely guessing and groping in the dark for the dawn.

During the catamenia there are many nervous patients who ought not to be operated upon. The effect of even nitrous oxide gas, unless the bladder is previously emptied, is frequently to excite unconscious micturition. It is the custom of many of us to avoid prolonged or painful operations for nervous women at this time. One of the difficulties which meets many a gray-headed dentist is to know if his patients are in the pregnant or the menstrual period. It seems absurd that even an aged dentist, who may be a great-grandfather, has not as much confidence from women in this respect as a medico who may have only passed the years of discretion when he passed his examination. What should a woman do to save her teeth? Added to the constitutional treatment necessary in special cases, a solution (one to twelve parts of water) of chlorinated soda, kept cool in a dark bottle, is one of the best antiseptics and stimulants known, and may be used as a mouth-wash after each meal, and before retiring to bed. This may be used one day, followed successively by common magnesia, or what is perhaps better, bicarbonate of soda, used in solution the same way. Frequent rubbing of the gums with the finger is alone stimulating. The badger-hair tooth-brush with chalk and soap are better than bristles and coarse powders.

But I must stop before I am told to. Before I began to write this paper I had ideas which have since vanished into thin air, and this seems only the shadow of what I intended it should be. However, the best that the most of men can do in a hurry can seldom be well done; but the best that some of us can do, even with leisure, is not as good as the worst that many here might do, even in their haste.

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